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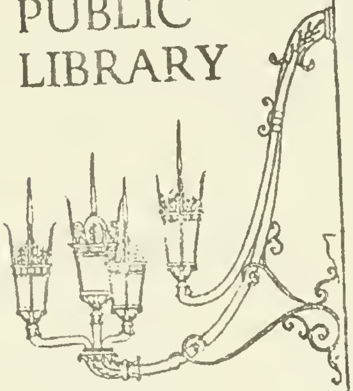

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SUMMARY OF SPACE NEEDS
SOUTH STATION TRANSPORTATION TERMINAL
BOSTON, MASSACHUSETTS

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SUMMARY OF SPACE NEEDS
SOUTH STATION TRANSPORTATION TERMINAL
BOSTON, MASSACHUSETTS

Prepared for
Massachusetts Port Authority
(Massport)

April 17, 1972

Gladstone Associates
Economic Consultants
Washington, D.C.

GLADSTONE ASSOCIATES
ECONOMIC CONSULTANTS
1750 Pennsylvania Avenue, Northwest | Washington, D. C. 20006 | 202-298-7000

April 28, 1972

Mr. Paul F. May
Director of Development Massachusetts Port Authority
470 Atlantic Avenue
Boston, Massachusetts 02210

Dear Mr. May:

We are pleased to submit our updated summary of space needs for a transportation terminal at South Station.

We conducted interviews during March and April, 1972, with the representatives of the Greyhound and Trailways bus companies, the Penn Central Transportation Company, MBTA, major domestic airlines, car rental firms and local bus and taxi carriers. The result of our surveys reveal a space need potential of approximately 350,000 square feet including rough calculations for drives and approaches in bus parking areas.

Long haul and commuter buses are expected to need about 250,000 square feet of space, or 70 percent of the total, for such items as bays and drive through stalls, ticket and baggage handling, waiting rooms, package and freight services, tour and travel facilities, and general offices. Rail carriers, including companies providing both long haul and commuter train service, will require some 30,000 square feet of space primarily for waiting rooms.

In our judgment, Massport will require 60,000 to 80,000 square feet of space primarily for offices, retail, and maintenance activities. The calculation for retail space needs assume no additional office or transient construction activities on the subject site. However, we strongly advise the undertaking of a more detailed retail study to refine space needs and to determine specific retail functions and locations prior to final design activities.

We also advise the close monitoring of external forces that could influence future levels of bus service and space needs. These include the elimination of commuter rail subsidies, the construction of a third harbor tunnel, and office/transient facilities constructed in connection with the terminal facility.

Development assumptions associated with each major space need calculation are included in the report. In addition, we have noted all problems or suggestions for spatial arrangements made by the prospective users during

the course of the interview process as an aid to design activities.

It has been a pleasure to undertake this assignment for you. We look forward to working out final arrangements on Phase II - Financial Activities, in the very near future. If there are any questions regarding this report, please do not hesitate to call me.

Sincerely,

Barry N. Sussman

Barry N. Sussman
Senior Associate

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SUMMARY HIGHLIGHTS

Total space requirements for a multi-modal transportation center are on the order of 350,000 square feet. Space requirements by mode or major user and by type of space are summarized in the following tables.

In general terms, most space will be required to accomodate long haul and commuter bus operations -- some 250,000 square feet -- with significant space requirements for combined haul activities and Massport's administrative operations.

The major space need, by type of space, will be required to accomodate bus bays and drive-through stalls -- some 200,000 square feet -- including drives and ancillary space. Waiting room space for different modes should total about 24,000 square feet, with requirements for separate facilities for long haul buses, commuter buses and rail.

Retail facilities are likely to require about 30,000 square feet of space with concentrations at the main concourse levels and small enclaves at convenient points for the traveler,

Freight and baggage storage for long haul bus and train service will require about 38,000 square feet of space, with the bulk of this total -- some 20,000 square feet -- required by the two long haul bus carriers.

Table 1

SUMMARY OF MAJOR SPACE NEEDS BY TYPE
SOUTH STATION TRANSPORTATION CENTER
BOSTON, MASSACHUSETTS

Type of Space	Space (In Square Feet)
Bus Bays	70,000
Drive Through Stalls	135,000
Tickets or Other Counter Space	3,900
Baggage Handling	2,000
Freight & Baggage Storage	38,000
Tour & Travel	950
Lounge or Rest Areas	2,900
Communications	3,600
Office Space	13,500
Dispatcher Space	1,300
Waiting Room	23,500
Retail	30,000
Parking[1/]	8,000
Security	2,500
Baggage Check	4,000
Major Storage	12,000
Maintenance	5,000
Total	356,150

1/ Refers to internal space ancillary to a major use, not parking garage space.

Table 2

SUMMARY OF MAJOR SPACE NEEDS BY MODE[1]
SOUTH STATION TRANSPORTATION CENTER
BOSTON, MASSACHUSETTS

Major User	Space (In Square Feet)
Long Haul Bus	124,700
Commuter Bus	129,400
Subtotal Buses	254,100
Long Haul Trains	28,500
Commuter Trains	0
Rapid Transit	2,900
Subtotal Trains	31,400
Airlines	500
Taxis, Local Bus, Tour Bus	250
Auto Rental	400
Subtotal Other Space Needs	1,150
Massport	58,300
Total Major Space Needs	345,000

1/ Refers to space required for construction purposes. Does not include parking garage needs, lineal space for stacking or double counting for shared facilities.

Massport will require nearly 30,000 square feet of space, exclusive of retail space, for offices, maintenance, storage, security, and other administrative functions. Space needs by user and type, are presented in detail in the following table.

It is noted that the space requirements summarized above constitute a substantial increase over that projected in the 1965 study. Most of the difference stems from the needs of major bus companies whose business has increased sharply in recent years, and because of the combined rail facilities.

Forces are at work that could change these space needs significantly. These forces include action by the legislature to stop the subsidy for commuter trains, the construction of a third harbor terminal bringing more North Shore buses to South Station and the construction of office and/or transient facilities as part of this transportation center. Specific readings of impact on space needs will be required as these problems are resolved and detailed planning progresses.

Table 3

SUMMARY OF SPACE NEEDS BY MODE AND TYPE

SOUTH STATION TRANSPORTATION CENTER

BOSTON, MASSACHUSETTS

(In Square Feet Where Appropriate)

	MODE OR USER								
Type of Space	Long Haul Buses	Commuter Buses	Long Haul Trains	Commuter Trains	Rapid Transit	Airlines	Taxi, Tour Bus, Local Bus	Auto Rental	General Station Needs (Masspor
Bus Days (Number)	40-45	40 2/	--	--	--	1	4-5 2/	--	--
Bus Bays (Square Feet)	70,000	--	--	--	--	1,500	--	--	--
Drive Through Space	--	125-140,000	--	--	--	--	10,000 6/	--	--
Ticket or Other Counter Space	1,500	3/	500	--	300	1,200-2,000	--	400-600	--
Baggage Handling	1,000	--	500	--	--	500	--	--	--
Freight & Baggage Storage	20,000	--	18,000	--	--	--	--	--	--
Tour & Travel	800	--	--	--	--	--	150	--	--
Lounge or Rest Areas	1,600	--	500	--	--	--	--	--	800
Communications	1,600	--	--	--	--	--	--	--	2,000
Office Space	8,000	--	1,000	--	2,500	--	--	--	2,000
Dispatcher Rooms	200	400	500	--	100	--	100	--	--
Waiting Room	12,000	4,000-5,000	7,500	--	5/	--	--	--	Previousl Covered
Stacking Space		1,600-2,000 Lineal Feet	--	--	--	--	350-400 lineal feet each	--	--
Other Space Needs:									
Retail	--	--	--	--	--	--	--	--	25-35,000
Parking Space	8,000 1/	--	--	--	--	--	--	4,000-5,000	--
Security	--	--	--	--	--	--	--	--	2,500
Baggage Checking	--	--	--	--	--	--	--	--	4,000
Major Storage	--	--	--	--	--	--	--	--	12,000 8/
Maintenance Areas & Storage	--	--	--	--	--	--	--	--	5,000

1/ Truck space at freight pick up point

2/ Drive through stall space

3/ Will use same ticket windows as long haul carriers

4/ No space needs in addition to those provided for long haul and commuter operations

5/ MBTA is satisfied with the amount of space currently existing for this use

6/ May be shared with commuter drive through space

7/ Assumes no major office or transient uses

8/ Unclaimed baggage

SECTION I. INTRODUCTION

In December of 1965, Gladstone Associates prepared an analysis of South Station Development Potentials for a trade and transportation center for the Massachusetts Port Authority (Massport). The purpose of this study is to update the space need requirements of users of the proposed South Station facility from those determined in the 1965 study.

In undertaking this assignment, Gladstone Associates conducted extensive interviews with all companies that could be potential space users in a multi-modal transportation center including those providing the following services: inter-city rail, inter-city bus, commuter bus, commuter rail, taxi, limousine, airlines, and car rental. In addition, discussions were held with the Port of New York Authority to ascertain the functions and operation of their bus terminal at Eighth Avenue and Forty Second Street in Manhattan. This latter step was undertaken in order to unearth potential problems that could occur in the construction and administration of a multi-modal transportation center and to draw parallel examples of space needs in such a facility.

The results of our surveys and discussions indicate that space will likely be required at South Station for the following facilities:

- Long distance, inter-city bus terminal
- Suburban bus terminal
- Inter-city railroad terminal
- Commuter rail terminal
- Downtown airline terminal
- Taxi and bus vehicular pickup facilities
- Automobile rental agencies and storage facilities
- Retail sales space
- Uses customarily ancillary and incidental to inter-city transportation such as waiting rooms, baggage handling, freight handling, and tour services

The sections that follow summarize the space need requirements of each major transportation mode by major functional category. It should be noted that the space requirements indicated by the various bus, taxi, rail, car rental, and airline companies are subject to modification based on change of circumstances over the course of time. The conditions surrounding the approximation of space needs are discussed below in conjunction with the appropriate mode. In addition, other factors could influence space needs, particularly with regard to retail sales facilities and commuter bus operations. These include the construction of a major office complex -- by a private developer -- in conjunction with the South Station project and the ending of subsidies to the commuter rail system.

SECTION I. SPACE NEEDS BY MAJOR MODE

The section that follows sets forth our conclusions with regard to space needs at a multi-modal transportation center by major travel mode. Other space needs -- such as those normally associated with such a facility but not directly attributable to an individual user -- will be covered in a subsequent section.

A. Bus Terminal Operations

> In general terms, long haul and suburban bus operations will require a total of about 250,000 to 270,000 square feet of space. Of this total, some 70,000 square feet will be required to accomodate from 40 to 45 saw cut bus bays including driveways and other access facilities. In addition, 125 to 140,000 square feet will be required to handle 40 to 45 drive-through passenger pickup stalls including all service drives, the waiting platforms and other access features to other parts of the terminal. The additional space will be required for major baggage handling and parcel operations (some 12,000 square feet) office space for the major bus carriers (some 8,000 square feet) and space for travel bureaus, ticket booths, local baggage handling, employee lounges, communications systems, dispatchers, and parking for the freight handling operations.

Suburban and inter-city buses bound for downtown locations will constitute the major space uses at a South Station Transportation

Center. Interviewed in the course of the study were the two major long haul carriers -- Trailways and Greyhound -- and some seven carriers currently utilizing the Greyhound and Trailways facilities for medium haul commuter operations and service to resort areas. These include Vermont Lines, Bonanza, Englander, Peter Pan, Almeida, Trombley, and Plymouth and Brockton Railway Company.

1. Suburban Commuter Bus Operations. Suburban buses currently use the Greyhound and Trailways facilities, as well as street frontage near the Essex Hotel opposite South Station. Our survey reveals that the operating methods of most commuter lines are geared to drive-through stalls rather than saw cut bays. This maximizes space utilization, shortens loading and unloading time and minimizes traffic circulation conflict. We judge that about 12 bays are currently needed to handle medium haul commuter and resort operations and 3 more bays for expansion, covering approximately 11,000 to 12,000 square feet of space. All other commuter operations will require about 40 to 45 drive-through spaces for quick, efficient loading and unloading, requiring 125 to 140,000 gross square feet.

In addition to space required for bus loading and unloading there will be a requirement for stacking of some 40 to 50 buses awaiting bay or drive-through space during peak hours. This could require some 1,600 to 2,000 lineal feet in the approach area through

the bus terminal,or would require the design of ramp space available for the stacking of buses.

Suburban bus operations have little requirement for baggage handling operations, administrative offices, and the like. As a result, loading and unloading areas, ticket windows, and dispatcher space constitute the major requirements of this group. A common waiting room area of some 4,000 to 5,000 square feet accessible to the drive-through ramp locations would be appropriate on a level separate from the waiting room and saw cut bays required for the long haul carriers and medium distance commuter operations.

As a result of our discussions with officials at the Port of New York Authority, we learned that commuter bus operations generate heavy peak hour volumes that create problems in the use of moving stairs, doorway areas, and other terminal facilities. As a result, commuter operations should be located near street level and be connected to the street and/or local transit areas by as few steps as possible to minimize congestion on moving stairs and in doorways. If possible, other forms of people movers -- ramps, and wide doorways -- should be designed to alleviate the problem of peak hour congestion in the facility.

It should be noted that prospects exist that suburban buses from many locations will be phased out of operation,or will become feeders,to the outline terminals of MBTA Rapid Rail Line. Should this

situation occur MBTA officials calculate that some demand for drive-through commuter bus space may be cut back. However, the parallel example of the New York facility has shown a substantial increase in suburban bus commutation -- in addition to rail facilities -- because of the flexibility of bus lines in their ability to serve newly developing suburbàn areas. (The fixed geographic nature of rail commuter operations, particularly terminal points, and the propoensity of commuters to avoid changing modes of travel (i.e. between buses and rail) make the continued use of commuter buses a viable reality for the future.) As a result, many carriers are expanding their operation to accomodate ever increasing demands for their facilities in spite of MBTA's premonition

2. Long Haul Inter-City Buses. Both Greyhound and Trailways are interested in a combined bus transportation facility at South Station on the assumption that overall operations will be improved and that costs for bus bay space as well as for space in the terminal for such

uses as ticket windows, travel bureaus and offices will be competitive and fair. It is evident from statistics in New York that the consolidation of bus operations at the Port Authority Terminal was beneficial to both companies in terms of volume. However, major areas of conflict have developed in New York over the cost of renting space, the types of contract negotiated, and the departure charges made by the Port Authority as a revenue source for the terminal.

Greyhound has a much more significant operation in the Boston area at the current time than does Trailways. Greyhound is a consolidated corporation, whereas Trailways is made up of a number of small operators using the Trailways Company name. As a result, the Trailways operation is still growing in the Boston area and their space requirements are somewhat less overall than those for Greyhound.

A fierce competitiveness exists between the two companies -- noted by New York Port Authority officials, as well as by executives interviewed from each company. In addition, wage rates and employee contracts differ markedly between the two companies. As a result, sharing of anything but common waiting room facilities will be impossible and "separate but equal" facilities of all kinds will be required. As a result, both Greyhound and Trailways and their subsidiary operations would require separate ticket positions, baggage, freight and parcel handling operations, tour offices, dispatch offices, administrative offices, lounge areas, drivers' rooms, and telephone information switch boards.

Because of their larger operation, Greyhound requires approximately one-third more space for almost every aspect of their operation including bus bays, baggage, freight and parcel handling facilities, ticket counters, office space and the like.

Greyhound and Trailways indicated a desire for certain innovative facilities at their bus bay locations. These include facilities for gas, toilet dumps, and power so that the buses could continue to be lighted, heated, or cooled without running the motor of the bus, and thereby imposing a drain on the bus battery and creating a pollution problem.

Other matters mentioned that should be brought to the attention of architects and engineers in final design stage include the juxtaposition of ticket counters so as not to interfere with loading and unloading of buses and other terminal operations, such as tour offices. The location of passenger baggage handling should be adjacent to the ticket window operations and should be connected to the bus bays by some type of conveyor system which will expedite the handling of passenger baggage.

Both companies underscored the need for conveniently locating large and accessible freight and baggage handling facilities. According to recent statistics, the freight handling end of bus company operations has increased at the rate of 15 percent per year. Both major companies are overcrowded in their New York facilities in spite of having 15,000 square feet each for this operation. The space needs noted above provide for some 16,000 square feet of space for Greyhound and some 7,000 square feet for Trailways. In actuality, the Trailways space may be understated because of the need for possible long-range extension and the Greyhound

space may be somewhat inflated. Nevertheless, the magnitude of some 20,000 square feet of space for the two companies in Boston is indicative of the importance the companies place on this function. In addition to adequate facilities, parking space for Step-Vans and similar small trucks is a necessity as well as a convenience, for movement between freight handling centers and the location of the buses.

3. Other Matters of Concern. The interview process resulted in the disclosure of several factors influencing the success of this terminal facility. These are presented below.

a. Intermodal Relationships - Inter-city bus travel has been on the increase in recent years in spite of extensive competition from Amtrak for the "meat and potatoes" runs out of Boston. The subsidy provided Amtrak by the federal government has allowed them to reduce their prices to New York and points south, forcing major inter-city bus carriers -- Greyhound and Trailways -- to reduce their fares in order to maintain their volumes. This has created tremendous animosities between the major bus carriers and the railroad.

Both companies felt that continued rail subsidies could eventually drive the long haul bus carriers serving the northeast corridor out of business, or certainly curtail a significant portion of their operation between Boston and Washington. As a

result of this animosity, both Greyhound and Trailways expressed reluctance to move into a multi-mode transit terminal in such close proximity to Amtrak/Penn Central because of the possibly devastating impact on their business. It is clear that the bus operators would not share waiting room space or any other facilities with the long haul train operation.

b. Relationships Between Carriers. Trailways appears to be in somewhat of a critical position because of the need to move from their antiquated Park Square location. Greyhound owns their property and is located in a generally stable neighborhood not threatened by public action or the expansion plans of others. Greyhound is interested in developing a major bus terminal facility and leasing space to Trailways and the other users, and would also consider a joint venture proposition with Trailways in the development of such a terminal. Greyhound is somewhat apprehensive about moving into a facility owned and operated by Massport, or any other authority, because of the implications of costs and lessons learned through their experiences in New York. The ramifications of this situation are somewhat unclear. However, the implication of Greyhound's position is that they would

resist committing themselves to the major transit facility if not given very competitive financial terms in lease arrangements. Greyhound representatives were secure in noting that they could easily survive for years at their current location, especially if some or all of their tenants were to leave.

c. Maintenance and Storage. Greyhound has two garages in South Boston suitable for their maintenance and storage needs during off peak hours. They are not in a position to handle anything more than emergency maintenance for other subsidiary tenants because of minimal space availability. Trailways has no such facilities in the vicinity of South Station and would be looking for space to store and service 20 to 25 buses near the terminal; but certainly not in it.

It should be pointed out that storage space will be required for up to 100 commuter buses in the vicinity of South Station once a facility is in operation. This space should be inexpensive and preferably open with convenient quick access to South Station to meet evening peak demands. It will be incumbent upon Massport to help the major commuter carriers find such space, if not provide the space themselves, in one of their many holdings in the vicinity.

This open storage requirement is vital to the success of a major commuter bus terminal at South Station.

B. Rail Terminal Facilities

> Long haul and commuter trains and rapid rail transit facilities will require some 31,400 square feet of space. Commuter trains can share facilities with the other rail modes and therefore require no separate or additional space. Primary rail terminal needs are for freight and baggage handling facilities (18,000 square feet), waiting rooms (7,500 square feet), and office space (3,500 square feet). Other space needs are for ticket counters and personnel areas.

The primary rail users at South Station will be the Penn Central Transportation Company operating long-haul train service for Amtrak; the commuter rail network operated by the MBTA, serving suburban locations on the old New Haven Line; and MBTA/rapid transit commuter lines, currently serving the South Shore, with service to North Shore points expected in the not too distant future.

1. Long-Haul Trains. The Penn Central Company has indicated a desire to have limited ticket space, a small waiting room area, a small locker room space for employees away from the public sector -- preferably below the main station concourse -- and a rest space for train crews. In addition, Penn Central Company would like to have about 1,000 square feet of space for executive offices, but would plan to move their

communication system -- currently occupying some 20,000 square feet of space -- out of South Station to their Westwood headquarters.

Ticket and immediate baggage handling space requirements should be less than 1,000 square feet. Rest space for crews would be of similar size. As a result space needs for the Penn Central Company, exclusive of waiting areas and baggage and freight handling facilities would be on the order of 3,500 square feet.

Waiting room and lounge areas, and baggage room facilities serving railroad passengers should require approximately 25,000 square feet of space with approximately 20 to 30 percent of this total used for waiting room areas. This amount of space should be more than ample for day to day and even prime time travel requirements for long haul train passengers. It will, however, be insufficient during the few peak holiday periods when overcrowding is likely to occur. It is expected, however, that all space demands are to be programmed for the normal peak period situation and not the unusual Christmas holiday or other premium periods.

2. Commuter Trains. Commuter trains operated by the MBTA currently carry some 4,000 passengers a day along the old New Haven routes. Two-thirds of these passengers are destined for South Station. The commuter train operation is apparently heavily subsidized by the state and is at the disposal of the state legislature in terms of its annual subsidy. There have been no long term plans for continuing commuter rail operations, but the operation has in fact been continued, on a year-to-year basis, by the

legislature for at least the past five years. The prospects are pretty strong, according to MBTA officials, that the legislature will ultimately make a final determination to continue subsidizing rail operations over a long period of time thereby ending the indecision and allowing the MBTA to create an efficient rail operation.

Because of the low volume of operation and the nature of commuter train service (e.g. no baggage, short waiting periods, no long layovers for train crews), no additional space allocations need be made. Waiting rooms, ticket counters and track facilities can all be shared with the long haul trains. Design of train staging areas should, however, provide for efficient movement of peak hour commuters from ticket counters to train staging areas to trains with minimal conflict with long haul train service.

3. Rapid Transit Facilities. The MBTA, operator of all rail rapid transit facilities serving downtown Boston was somewhat unclear about their space needs at South Station. The current volume of riders boarding at South Station in 1970 was 8,600, increasing to 9,100 in 1971 as the South Shore Line began gaining momentum and feeder bus operations were improved. MBTA expects a total patronage on the order of 15,000 once the North Shore Line is completed some years from now. South Station is one of three serving the main business section of Boston, and is not a major terminal point in comparison with Park and Washington Street Stations.

The MBTA rail system is to be supplemented by an extensive feeder bus system connecting most suburban jurisdictions and outlying MBTA stations. It is on this basis that the volume noted above is to be attained. According to the MBTA no additional facilities are required over and above those which currently exist. There may be a demand for some 2,500 square feet of office and administrative space and clearly a modernization of the facility would be advantageous to the overall rapid transit operation.

4. Other Matters of Concern. The interview process uncovered additional information that could create an impact on the space needs of rail facilities at South Station. These are noted below:

a. Penn Central Negotiations. The Penn Central Transportation Company is currently negotiating with the Boston Redevelopment Authority (BRA) to revise the entire Intercity rail transportation center at South Station. Penn Central currently operates seven inter-city trains per day out of South Station and feels they have more track and waiting room space than they possibly require. The rail facilities were established at a time when the number of long-haul inter-city trains per day was many times that which currently exists. As a result, Penn Central no longer needs the number of tracks provided for their use and would like to divert a large amount of their current

operation to their Back Bay Station. However, Penn Central would be willing to maintain operations at South Station if negotiations with the BRA could result in the elimination of several tracks, and rental required thereon, and in improved train storage facilities and reduction of overall space requirements to reduce overhead. In addition, Penn Central is seeking direct financial remunerations beyond the interest of this study. The outcome of these negotiations could be vital in determining Penn Central's space needs and participation in the terminal facility.

b. Commuter Rail Service. In the event the state legislature elects to end the subsidy of commuter rail service, the bus space requirements are likely to increase substantially. MBTA is convinced that commuters will resort to medium distance buses. We judge that the volume of commuters currently riding on MBTA trains would fill 60 to 70 buses during peak hours from Worcester, Framingham and other locations. Should the legislature decide to eliminate the rail transit subsidy, commuter bus operations needed to fill the void would require an increase of drive through ramp space and bays on the order of 50 percent over that noted in the previous section. In addition, waiting room, ticket counter, retail sales and other service features would also need to be increased to accommodate the added patronage.

c. Boston Transportation Plan Review (BTPR). The MBTA noted the existence of the Boston Transportation Plan Review. This group is currently studying a number of different transportation problems and possible solutions for serving downtown Boston. These include highway, rail, bus, and modal combinations. One particular matter under consideration by the BTPR is the possibility of a third tunnel connecting the North Shore area with downtown Boston. According to MBTA officials, the eventual construction of a third tunnel would probably increase bus transit from certain points along the North Shore directly to South Station. Unfortunately, no indication of the magnitude of this operation is available at the present time. MBTA officials seem to feel that the volume of bus traffic using a third tunnel to South Station could be reasonably significant during the peak hours, and could add as much as ten percent to the need for drive through ramps, waiting room space, ticket offices, and the like.

It is, therefore, essential that Massport maintain close coordination with BTPR during the course of planning for the South Station facility in order to ascertain the potentials for the construction of this third tunnel and to determine its specific impact on the South Station facility.

C. Downtown Airline Terminal Facility.

> Space requirements for a downtown airline terminal are minimal, 1,200 to 2,000 square feet of space for 6 to 12 ticket counters and associated baggage handling facility. In addition, exclusive use of one busbay would be required near the ticket counter.

The possibility of providing downtown airport service including ticketing, baggage facilities, check-in, as well as airport ground transportation connections, were re-examined at this time. The original study noted that the value and utility of such a terminal would be limited because of the location of Logan International Airport with respect to the downtown area. However, conversations with the Vice Presidents of Sales for Eastern, American, and Northeast Airlines (the major domestic carriers serving Logan Airport), indicated a strong interest for the creation of such a facility due to the possible magnitude of a multi-modal transit facility at South Station bringing suburban airport users to a central point, and the interest of the Airways Transportation Company in providing service to Logan.

Space requirements for such a facility would be minimal, perhaps 1,200 to 2,000 square feet and up to 12 small ticket counter positions and comparable baggage space. Nevertheless, the possibility exists that such a facility can be provided at South Station as yet another element of the facility serving the large

number of commuters currently forced to drive private automobiles to Logan Airport.

Convenient check-in and baggage handling facilities at South Station combined with fast, efficient rail and bus commuter service to all outlying points in the Boston Metropolitan area could be an asset to the transportation centers and reduce congestion at ticket windows and baggage handling operations at Logan.

Another reason for the interest in an airline terminal facility stems from the increasing number of office workers and major business travelers locating in the vicinity of South Station in recent years. The same situation will be noted below in the discussion of car rental facilities. Preliminary analyses reveal many users of Logan Airport have one or more of their destinations in the South Station office complex which is expected to continue in a growth posture over the coming years.

Final decisions with regard to an airline terminal should be reserved, because of the number of years still required before a South Station terminal facility is a reality, and because of the lack of clarity in the construction of a major office building by private developers over the air rights of the tracks, as well as the need to determine the overall growth situation in the vicinity of South Station. During the course of detailed project planning, close coordination sould be maintained with the major

domestic carriers to get a constant reading on their interest in such a facility.

It is further noted that Northeast Airlines has recently merged with Delta and, as a result, has not clarified its proposed operating policies for the years ahead. Northeast is based in Boston and, like many other airlines, has a ticket office facility in the vicinity of South Station. Because of the volume of Northeast's service in and out of Logan Airport, close coordination will be required with this group. In our judgment, they probably represent the keystone of a downtown airline terminal and their lack of participation could eliminate the possibility of such a facility in spite of the desires of the other carriers.

D. Taxi, Local Transit, and Tour Bus Facilities

> About 12,000 square feet of space is needed for these users. All but 250 to 300 square feet are for bus drive through stalls for local transit buses (MBTA) and may be shared with the commuter bus facilities. The Gray Line Tour people will need one busbay that can be on a shared basis.

The major items discussed here are arrangements for taxi and vehicular pickup, local transit bus facilities, tour buses, and airline transportation facilities, in the event a downtown airport terminal is not developed at South Station. As indicated in our previous study, the volume of pedestrian traffic during peak hours

is likely to generate substantial need for taxi as well as local bus transportation service. Checker Taxi Company -- the exclusive carrier at South Station -- has indicated no space needs at the South Station facility. Checker has indicated a preference for an internal ramp system for picking up and discharging passengers, and space requirements for stacking of cabs during the busy period. Our discussions with the Port of New York Authority revealed that they would have preferred to develop an internal ramp system, rather than the use of surrounding streets for taxi pickup and discharge situations. The internal ramp system is more efficient, reduces exposure to the elements for the taxi passenger, and alleviates congestion on surrounding streets.

Our discussion with the MBTA operators of the local transit system in Boston revealed a need for long curb storage space for stacking, or two parallel covered waiting ramps and pedestrian areas. MBTA would prefer some shelter, or an internal ramp system, in the building that would be heated and lighted, with 300 to 400 feet of stacking space in three parallel lanes.

In order to make South Station facility a viable and efficient operation, the use of MBTA transit buses is essential for connections to downtown, Back Bay and other major employment centers in Boston. Change of mode is difficult and painful at best

and every precaution should be taken to minimize the problems associated with the modal split. The experience learned in New York shows that local transit service is extremely mental to the smooth flow of traffic surrounding the terminal location. This creates problems for the commuter, the transit operator, and tenants in nearby office and commercial facilities. It is strongly suggested that an internal bus ramp system be considered, possibly sharing drive through ramp space with commuter buses at the same level to facilitate overall traffic flow and the change of mode requirements.

Gray Line Tours, who also own and operate several commuter bus lines, would also be serving South Station. Their space requirements would not be over and above those to be provided for their commuter operation. Gray Line will need a small tour office of 150 square feet in addition to their bus operating space.

Should the decision be made not to provide a downtown airline terminal, the Airways Transportation Company would need to stop at South Station with one bus every ten to twenty minutes throughout the day. ATC would prefer not to have a bay, but would prefer an open fast drive-through facility to expedite pickup and discharge of passengers. In our judgment, it would be inappropriate to let the Airways Transportation Company use the surrounding city streets

when extensive ramp and drive-through spaces are to be provided for other bus and taxi services. However, because of the speed and headway required by ATC, a drive-through stall will have to be reserved for their exclusive use.

SECTION III. OTHER SPACE NEEDS

The South Station Transportation Terminal will require facilities over and above those needed by the major individual carriers. These needs are summarized in this section.

A. Retail Sales and Service

> We judge that some 25,000 to 35,000 square feet of space will be needed for retail functions to serve the terminal facility and its patrons. This requirement could increase to 50,000 square feet if office space and/or transient accomodations are developed in conjunction with the terminal.

The demand for retail and service facilities at South Station could vary greatly depending on construction of private office building space on the air rights over the tracks and other activities in the neighborhood. The original study indicated a demand for at least 25,000 square feet, but not more than 50,000 square feet oriented directly to the needs of site users. This magnitude of demand was based on the fact that special uses such as an office tower, motor hotel, and trade mart would be built at the South Station site in addition to the multi-modal transportation center. A great deal of the retail activity proposed for South Station would have been oriented to the non-transportation users.

Our discussions with officials of the Port of New York Authority revealed that some 60,000 square feet of retail and service commercial space is located within the Port Authority bus terminal. This magnitude of space is geared to serve some 35,000 to 40,000 peak hour users and an annual volume of over 67 million passengers. It is expected that the number of passengers in and out of South Station Transportation Center on any given day would be significantly less than the 211,000 average daily passengers arriving at the Port of New York Authority bus terminal. In addition, a significant number of retail outlets located in the Port Authority bus terminal in New York are oriented to shoppers, theater goers, and office workers in and around 42nd Street and Eighth Avenue.

On the assumption that no office building or trade mart space will be constructed in association with the transportation terminal we would recommend that some 25,000 to 35,000 square feet of retail space be planned consistent with the list of uses outlined in our earlier study. Should a major office complex be constructed by private developers in association with the terminal facility and, should additional commercial office space be constructed in the vicinity of South Station, the upper range for retail space at this location could still reach the 50,000 square feet noted in our previous study.

Certain major elements of the commercial mix should be oriented to the streets surrounding South Station in order to take advantage of non-site users. These would include certain eating and drinking places, banks, drugstores, clothing stores, as well as certain small personal service establishments such as shoe repairs, barber shops, and the like.

Specific use locations, size of establishment, and mix should be the subject of a separate retail study, undertaken closer to project execution.

Experience from the New York situation reveals that certain commercial or service facilities require locations with high pedestrian traffic volumes and that poor locations -- off the beaten track -- could result in business failures. However, for the most part, all business establishments in the Port of New York bus terminal are thriving and the waiting list for merchants desiring space at this location would take years to dissipate. The Authority is still making major revisions in store locations, sizes, and orientation as market factors become more evident with experience.

It should be noted that eating and drinking places should not be expensive and be geared to high volume, quick turnover operations. A number of small snack bar operations are recommended in a widely disbursed pattern around the terminal to serve the commuter as well as the long-haul passenger. Certain facilities such as banks which do

not require locations with high pedestrian exposure can be located further from the main access of pedestrian traffic. However, drugstores bookshops, and the like must be located in and near the main concourse area, accessible to the highest possible pedestrian volumes. Barber and beauty shops fall in the category of banks and, if appropriately advertised in the main concourse area can be located in an out of the way space leaving the more expensive retail area available for other uses in order to generate greater revenue.

B. Automobile Rental Facilities

> Space requirements for automobile rental agencies are minimal -- 400 to 600 square feet for counters. However, storage and "ready" spaces for vehicles will be significant in the garage.

Our field survey work included conversations with the regional managers of the Hertz and Avis Automobile Rental agencies. In our judgment, the existence of a multi-modal transit center at South Station is likely to generate demand for automobile rentals, especially when combined with the existence of substantial office space in the same neighborhood. As would be expected, the demand for space within the terminal itself is relatively small, but the need for automobile storage facilities as well as appropriate location of rental booths and "ready spaces" are essential to the design of the facility.

The local Avis franchisor, Frank Sawyer, also owns the Checker Cab Company. Avis has a businessmen-oriented office at High and Federal Streets near South Station. This location is able to attract customers using the South Station facilities.

Because no other car rental agencies exist in the area, Avis has a monopoly on the business and is doing a terrific volume (estimated at $500,000 per year). In addition to having office space, Mr. Sawyer has sufficient space to store automobiles and make them available to the customer at his current facility and would be unlikely to move unless forced to do so by the competition.

Hertz has been unable to find space in the vicinity of South Station and is interested in entering the terminal, assuming the area is improved according to plans. Hertz has had good experience renting cars at train stations in Washington, Philadelphia, and other cities and they feel that South Station would be a good location for them in Boston, especially with the presence of heavy office activity. Hertz figures to be able to match the current Avis volume in the South Station area, creating quite a demand for rental cars based on travel and office needs. Avis has indicated that they would follow Hertz into South Station, abandoning their current location in order to remain competitive.

As a result of our investigations, we judge that each agency would require about 200 square feet of counter space and storage for some 50 automobiles (25 each). In addition to the general storage requirement, each agency would need "ready space" for some 8 to 10 automobiles

accomodating the turn-in need, as well as the fast check-out requirements, of their customers. This means some 4,000 to 5,000 square feet of "ready space" will be required for parking, preferably near the car rental booth, and certainly at a level compatible with entering and leaving traffic, to expedite check-in and check-out needs.

We did not contact National Car Rental, but our experience has shown that this firm has not normally desired space in or around railway stations. National has a smaller operation and generally is satisfied with working out of a main downtown hotel and airports, as well as a central sales office. However, should National need space in South Station, an additional 200 square feet of counter space would be required, but significantly less storage space for automobiles because of their small share of the market.

C. Other General Space Needs

Mention has been made previously of the need to provide access for small trucks of the "Econo Line" or "Step Van" size to serve the major freight and parcel handling facilities of Greyhound and Trailways. There appears to be no need to provide separate ramps and entrance points for these trucks, but it should be underscored that adequate parking reserved near the parcel/freight facilities will be required for each of the two major companies. In addition, trucks using these facilities should have free and easy access and not be encumbered or slowed down by long haul or commuter buses during either normal operations or in their stacking procedures.

D. Possible Massport Needs

> We judge that Massport will require about 30,000 square feet of space in the terminal for internal operations. Major space users will be storage and baggage areas not required by the other major users (16,000 square feet); security, office space, and communications (6,500 square feet); and maintenance areas (5,000 square feet).

Our analysis of space needs likely to be attributed to Massport is based on the experiences of the Port of New York Authority. Major space requirements have been created at a terminal facility by the volume of unclaimed baggage and checked parcels. We judge that a 4,000 square foot main concourse check room will be needed, plus 12,000 square feet of parcel/freight storage. In addition to this major space user, most of which can and should be located in low value basement areas, are needs for Massport office and security facilities -- the latter a major requirement in a transportation facility in recent years -- and lounge and communications facilities. We judge that 2,000 square feet will be sufficient for a small office contingent comprising the facility manager and his staff and an employee lounge area of similar size. A security area of 2,500 square feet will be sufficient to house TV monitors, squad room, detention cells for adults and juveniles, medical room, small offices, and interrogation rooms.

The major carriers will operate their own telephone information systems, but this will not reduce the need for Massport to provide multi-modal scheduling information and announcements. In our judgment, 2,000 square feet will be sufficient to house operators' equipment and ancillary facilities in a basement or other low value space.

Finally, the facility will require a maintenance and storage area of some magnitude, in a basement or low value area to house repair shops, replacement equipment, and a full-time maintenance crew.

These space requirements may be considered the minimum. Massport may have larger office needs and may desire to consolidate other activities at this location. These requirements are based on standards noted at the Port Authority terminal in New York and similar facilities in Boston and Washington.

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